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Listing of Claims:

1. (Previously Presented) A quadrature modulator compensation system for compensating the transmission of a source signal provided by a signal source data generator, the quadrature modulator compensation system comprising:

a transmitter which translates a baseband transmitter input signal to a local oscillator frequency to generate a transmitter output signal;

calibration circuitry coupled to the transmitter suitable for sequentially generating at least two of a phase error estimate, a gain error estimate, and a dc offset estimate; and

predistortion circuitry coupled to the signal source, the transmitter and the calibration circuitry, the predistortion circuitry receiving the source signal and the phase error estimate of the transmitter as inputs and providing as an output the transmitter input signal as a function of the phase error estimate of the transmitter.

2. (Previously Presented) The quadrature modulator compensation system of claim 1, wherein the calibration circuitry is configured to generate the phase error estimate of the transmitter as a function of an angle of intersection between a desired transmitter envelope and an actual transmitter envelope and the gain error estimate of the transmitter as a function of variation in the actual transmitter envelope, and wherein the predistortion circuitry provides the transmitter input signal also as a function of the gain error estimate of the transmitter generated by the calibration circuitry.

3. (Original) The quadrature modulator compensation system of claim 2, wherein the calibration circuitry is configured to determine semi-major and semi-minor axes of an elliptical transmitter waveform, and to generate the gain error estimate of the transmitter as a function of the determined semi-major and semi-minor axes.

4. (Original) The quadrature modulator compensation system of claim 3, wherein the calibration circuitry is configured to determine a centroid of the actual transmitter envelope.

5. (Previously Presented) The quadrature modulator compensation system of claim 4, wherein the calibration circuitry is configured to generate the dc offset estimate in an in-phase component and a quadrature component of the source signal as a function of the centroid of the actual transmitter envelope.

6. (Previously Presented) The quadrature modulator compensation system of claim 5, wherein the predistortion circuitry is configured to provide the transmitter input as a function of the dc offset estimate in the in-phase and quadrature components of the source signal.

7. (Original) The quadrature modulator compensation system of claim 1, wherein the calibration circuitry is configured to determine a centroid of the actual transmitter envelope.

8. (Previously Presented) The quadrature modulator compensation system of claim 7, wherein the calibration circuitry is configured to generate the dc offset estimate in an in-phase component and a quadrature component of the source signal as a function of the centroid of the actual transmitter envelope.

9. (Previously Presented) The quadrature modulator compensation system of claim 8, wherein the predistortion circuitry is configured to provide the transmitter input as a function of the dc offset estimate in the in-phase and quadrature components of the source signal.

10. (Previously Presented) A method of compensating transmission of a source signal in a quadrature modulator, the method comprising:

calculating an actual transmitter envelope;

calculating a desired transmitter envelope;

determining a phase error estimate of the transmitter as a function of an angle of intersection between the desired transmitter envelope and the actual transmitter envelope;

predistorting the source signal to generate a transmitter input signal, wherein the transmitter input signal is generated as a function of the source signal and the determined phase error estimate;

generating a gain error estimate of the transmitter;

estimating a dc offset; and

generating a transmitter output signal as a function of the transmitter input signal,

wherein at least two of the phase error estimate, the gain error estimate, and the dc offset estimate are sequentially generated.

11. (Previously Presented) The method of claim 10, and further comprising:

calculating a variation in the actual transmitter envelope;

generating the gain error estimate of the transmitter as a function of the variation in the actual transmitter envelope; and

generating the transmitter input signal also as a function of the gain error estimate of the transmitter.

12. (Previously Presented) The method of claim 11, wherein calculating the variation in the actual transmitter envelope and generating the gain error estimate of the transmitter further comprise:

determining semi-major and semi-minor axes lengths of an elliptical transmitter waveform; and

determining the gain error estimate as a function of the determined semi-major and semi-minor axes lengths.

13. (Previously Presented) The method of claim 10, and further comprising:

determining a centroid of the actual transmitter envelope; and

estimating the dc offset in an in-phase component and a quadrature component of the source signal as a function of the centroid of the actual transmitter envelope.

14. (Previously Presented) The method of claim 13, wherein predistorting the source signal to generate the transmitter input signal further comprises generating the transmitter input signal also as a function of the estimated dc offset in the in-phase and quadrature components of the source signal.

15. (Previously Presented) A quadrature modulator compensation system for compensating the transmission of a source signal provided by a signal source data generator, the quadrature modulator compensation system comprising:

a transmitter which translates a baseband transmitter input signal to a local oscillator frequency to generate a transmitter output signal;

calibration circuitry coupled to the transmitter and configured to generate at least one of:

a phase error estimate of the transmitter as a function of an angle of intersection between a desired transmitter envelope and an actual transmitter envelope,

a gain error estimate of the transmitter as a function of variation in

the actual transmitter envelope, and

a dc offset estimate in an in-phase component and a quadrature component of the source signal as a function of a centroid of the actual transmitter envelope;

and

predistortion circuitry coupled to the signal source, the transmitter and the calibration circuitry, the predistortion circuitry receiving the source signal and at least one of the phase error estimate, the gain error estimate, and the dc offset estimate as inputs and providing as an output the transmitter input signal as a function of at least one of the phase error estimate, the gain error estimate, and the dc offset estimate,

wherein the calibration circuitry sequentially generates at least two of the phase error estimate, the gain error estimate, and the dc offset estimate.

16. (Original) The quadrature modulator compensation system of claim 15, wherein the centroid of the actual transmitter envelope is determined by the calibration circuitry.

17. (Currently Amended) The quadrature modulator compensation system of claim 16, wherein the predistortion circuitry is configured to provide the transmitter input as a function of the estimated dc offset[[s]] in the in-phase and quadrature components of the source signal.

18. (Original) The quadrature modulator compensation system of claim 15, wherein the calibration circuitry is configured to determine semi-major and semi-minor axes of an elliptical transmitter waveform, and to generate the gain error estimate of the transmitter as a function of the determined semi-major and semi-minor axes.

19. (Canceled)

20. (Original) The quadrature modulator compensation system of claim 15, wherein the calibration circuitry simultaneously generates at least two of the phase error estimate, the gain error estimate, and the dc offset estimate.